CLAIMS

1. A catheter for delivering a medical device into a body lumen, the catheter comprising:

an elongate body, at least a portion of the elongate body defining a medical device retaining region for retaining a medical device thereon, at least a portion of the medical device retaining region comprising a predetermined pattern of photoresist material.

2. The catheter of claim 1 wherein the predetermined pattern of photoresist material is constructed and arranged to retain the medical device to the medical device receiving region prior to delivery of the medical device.

3. The catheter of claim 1 wherein the medical device retaining region is an expandable balloon.

4. The catheter of claim 1 wherein the predetermined pattern of photoresist material defines at least one raised portion of the medical device receiving region.

5. The catheter of claim 4 wherein the at least one raised portion of the medical device receiving region extends outward from the elongate body.

6. The catheter of claim 5 wherein the medical device is a stent releasably engaged to the at least a portion of the medical device retaining region, the at least one raised portion releasably engaging the stent.

7. The catheter of claim 6 wherein the stent comprises an expandable framework having a plurality of openings therethrough, the at least one raised portion at least partially extending through at least one of the openings in the stent framework to releasably engage the stent framework.

8. The catheter of claim 7 wherein the stent has a reduced state and is expandable to an expanded state, in the reduced state the stent being engaged to the at least one raised portion of the at least a portion of the medical device retaining region, the stent being released from the at least one raised portion when the stent is in the expanded state.

9. The catheter of claim 8 wherein the at least a portion of the medical device retaining region is an expandable balloon.

10. The catheter of claim 1 wherein the predetermined pattern of photoresist material

defines at least one indented portion of the medical device receiving region.

11. The catheter of claim 1 wherein the elongate body is constructed from a catheter material, the catheter material and the photoresist material are constructed of the same material.

12. The catheter of claim 1 wherein the elongate body is constructed from a catheter material, the catheter material and the photoresist material being constructed from different materials.

13. The catheter of claim 1 wherein the photoresist material is a photo cross-linkable material.

14. The catheter of claim 1 wherein the photoresist material is a photo cross-linked material.

15. The catheter of claim 1 wherein the photoresist material is selected from at least one material of the group consisting of: cinnamate; cinnamate esters; bisazide derived nitrene with an olefin containing polymer; poly (vinyl cinnamate); photo-dimerizable groups that may be attached to poly (vinyl alcohol) such as napthyl acrylate, styrl acrylate or furan acrylate; sensitizer nitroaromatics (3-nitroacenapthelene); ketocourmarins (7-propoxy-3-benzoylcoumarin); photoactive condensation monomers such as 3,3'-(p-phenyl-ene)bis(ethyl propenate), dialkoxy acetophenones; benzoin; benzophenone-Michler's ketones; ketocoumarin-phenoxyacetic acid pairs; multi functional epoxides such as bisphenol_a, diglycidyl ether, and vinyl cyclohexane; diaryliodonium or truarylsulfonium salts; bisazide-cyclized polyisoprene (CPI) or phenolic resin with about 1-5% bisaryl azides compounds; polydiethynybenzene; novlac; polystyrene; polyvinylphenol; polyimide; and any combination thereof.

17. The catheter of claim 11 wherein the predetermined pattern of photoresist material is deposited on the catheter material by at least one deposition process from the group consisting of: ink jet printing, electrostatic spray, pressurized jet coating, contact printing and any combination thereof.

18. The catheter of claim 12 wherein the predetermined pattern of photoresist material is deposited on the catheter material by at least one deposition process from the group

consisting of: ink jet printing, electrostatic spray, pressurized jet coating, contact printing and any combination thereof.

19. A medical balloon having an outer surface and further comprising an expandable medical device releasably engaged on the outer surface of the medical balloon, the expandable medical device having a framework defining a plurality of openings therethrough, the outer surface of the medical balloon having a predetermined pattern of photoresist material thereon, the predetermined pattern of photoresist material comprising a plurality of protrusions extending outward from the outer surface of the medical balloon, at least some of the protrusions at least partially extending through the openings in the expandable medical device to releasably engage the expandable medical device prior to delivery of the expandable medical device.

20. The medical balloon of claim 19 comprising a proximal cone portion, a distal cone portion and a body portion disposed between the proximal and distal cone portions, wherein the protrusions are spaced about the body portion of the balloon.

21. The medical balloon of claim 19 wherein the protrusions extend through the openings from about 30% to about 100% of the thickness of the stent.

22. The medical balloon of claim 19 wherein prior to delivery of the expandable medical device some of the protrusions releasably engage the expandable medical device and some of the protrusions do not engage the expandable medical device.

23. A method of providing at least a portion of a medical device receiving region of a catheter with a predetermined pattern of photo-reacted material comprising the steps of:

providing the at least a portion of the medical device receiving of the catheter with a layer of photoresist material;

positioning a mask about the layer of photoresist material, the mask defining a plurality of openings through which a predetermined pattern of photoresist material is exposed;

transmitting light from a light source through the at least one opening to the predetermined pattern of photoresist material, thereby causing the predetermined pattern of photoresist material to be photo-reacted, thereby transforming the layer of photoresist

material into a combination layer of non-photo-reacted material and a predetermined pattern of photo-reacted material;

removing the mask from about the combination layer; and

treating the combination layer with a solvent, the solvent constructed and arranged to remove the non-photo-reacted material from the combination layer, the predetermined pattern of photo-reacted material remaining on the medical device receiving region.

24. A method of providing at least a portion of a medical device receiving region of a catheter with a predetermined pattern of photo-reacted material comprising the steps of:

providing the at least a portion of the medical device receiving of the catheter with a layer of photoresist material;

positioning a mask about the layer of photoresist material, the mask defining a plurality of openings through which a predetermined pattern of photoresist material is exposed;

transmitting light from a light source through the at least one opening to the predetermined pattern of photoresist material, thereby causing the predetermined pattern of photoresist material to be photo-reacted, thereby transforming the layer of photoresist material into a combination layer of non-photo-reacted material and a predetermined pattern of photo-reacted material;

removing the mask from about the combination layer; and

treating the combination layer with a solvent, the solvent constructed and arranged to remove the photo-reacted material from the combination layer, the predetermined pattern of non-photo-reacted material remaining on the medical device receiving region.

25. A catheter for delivering a medical device into a body lumen, the catheter comprising:

an elongate body, at least a portion of the elongate body defining a medical device retaining region for retaining a medical device thereon, at least a portion of the medical device retaining region comprising a predetermined pattern of photo cross-linked

material.

26. The catheter of claim 25 wherein the predetermined pattern of photo cross-linked material is constructed and arranged to retain the medical device to the medical device receiving region prior to delivery of the medical device.

27. The catheter of claim 26 wherein the medical device retaining region is an expandable balloon.

28. The catheter of claim 26 wherein the predetermined pattern of photo cross-linked material defines at least one raised portion of the medical device receiving region.

29. The catheter of claim 28 wherein the at least one raised portion of the medical device extend radially outward from the medical device receiving region.

30. The catheter of claim 29 wherein the medical device is a stent releasably engaged to the at least a portion of the medical device retaining region, the at least one raised portion releasably engaged to the stent.

31. The catheter of claim 30 wherein the stent comprises an expandable framework having a plurality of openings therethrough, the at least one raised portion at least partially extending through at least one of the openings in the stent framework to releasably engage the stent framework.

32. The catheter of claim 31 wherein the stent has a reduced state and is expandable to an expanded state, in the reduced state the stent being engaged to the at least one raised portion of the at least a portion of the medical device retaining region, the stent being released from the at least one raised portion when the stent is in the expanded state.

33. The catheter of claim 32 wherein the at least a portion of the medical device retaining region is an inflatable balloon.

34. The catheter of claim 26 wherein the predetermined pattern of photo cross-linked material defines at least one indented portion of the medical device receiving region.

35. The catheter of claim 26 wherein the catheter is constructed from a catheter material, the catheter material and the photo cross-linked material are constructed of the same material.

36. The catheter of claim 26 wherein the catheter is constructed from a catheter material,

the catheter material and the photo cross-linked material being constructed from different materials.

37. A medical balloon having an outer surface and further comprising an expandable medical device releasably engaged on the outer surface of the medical balloon, the expandable medical device having a framework defining a plurality of openings therethrough, the outer surface of the medical balloon having a predetermined pattern of photo cross-linked material thereon, the predetermined pattern of photo cross-linked material comprising a plurality of protrusions extending outward from the outer surface of the medical balloon, at least some of the protrusions at least partially extending through the openings in the expandable medical device to releasably engage the expandable medical device prior to delivery of the expandable medical device.